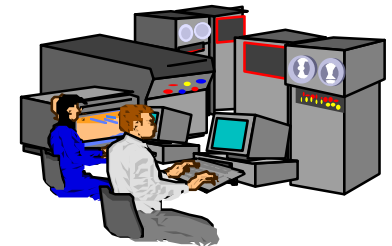# Information Systems Center/580

AETD Institutional Status Review
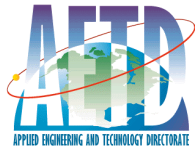
Presented by:

Elaine Shell
Head
Flight Software Branch
Information Systems Center

May 25, 1999

AGENDA

➢ **TECHNICAL ACCOMPLISHMENTS**
  – **Mission Support**
  – **Science Support**

➢ **TECHNOLOGY AND NEW MISSIONS**
  – **Technology Activities**
  – **Technology Program**

➢ **INSTITUTIONAL SUPPORT**
  – **Infrastructure and Mission Support**

➢ **INSTITUTIONAL STATUS**
  – **ISO9000**
  – **Center Operations**
  – **Budgets**
  – **Collaborations**
  – **Outreach**
  – **Institutional Issues**

➢ **SPECIAL PRESENTATION**
  – **Ray Whitley, Code 582, on "FSW Technology Initiatives"**
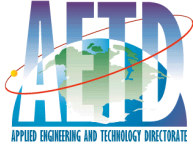
MISSION SUPPORT

➢ **EOS AM-1 (581/582/583/584)**

- **Presented Flight Operations Review (FOR) and Operations Readiness Review (ORR)**

➢ **EO-1/WARP (582/583/584)**

- **Completed End-to-end Mission Readiness Tests: Basic Command and Telemetry, and Science Engineering Planning Flow**
- **Completed 98% of the WARP's FSW Acceptance Test Plan – Minor Discrepancies have been Identified**

➢ **HST (582/584)**

- **Center Control System (CCS) Successfully Supported First 3 Simulations for Servicing Mission 3a**
- **Delivered HST NSSC-1 Baseline for Integration Testing with the Aft Shroud Cooling System/NICMOS Cryo-Cooler Flight Software**
- **Delivered Final Software to VEST to Support Integration of HST SI C&DH Testbed with CCS**
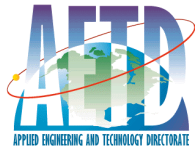
MISSION SUPPORT

➢ **Triana (582)**

- **Conducted an Excellent C&DH FSW Critical Design Review Led by Mike Blau**

➢ **MAP (582)**

- **Delivered FSW Build 2.0 – new ACS FSW Functionality, Floating Point Anomaly Fix, other Fixes to DRs**
- **Software Simulation of the ACE for use in MAP HDS went Operational – Enabling Testing of Mongoose Flight Code without Hardware HDS or Hardware ACE**

➢ **WFF Range (584)**

- **Supported 2 Successful Langley Drop Model Launches**
- **Successfully Computed the Roll Solution for Sounding Rocket Flight 40.013 Despite a Platform Gyro with only 3 of 4 Potentiometers Working**
- **Determined WFF Mobile Range Control Center will be used for VCL Launch Support**

MISSION SUPPORT

➢ **Landsat-7 (583/584/586)**

- **Successfully Launched on April 15 – Ground System Worked Flawlessly During the early Orbit Activation**
    - **Including EPGN Ground Stations in Alaska and Norway**
- **Distributed Initial LPS/IAS Products to NASA Upper Management**
- **Completed 50% of on-Orbit Initialization and Check-out in Prep for Ops**
- **Delivered Hardware to EDC to Complete LPDS Operational Architecture**
- **Delivered LPS Software Patches to EDC**
- **Completed System Testing of the LPDS Release 2.0 – turned over for Site Acceptance Testing**
- **LPDS/LPGS Requirements 83% Validated**
- **EPGN (Alaska and Norway)Command and Control Systems Performed Flawlessly During Launch of Landsat-7and Orbit Raising**

➢ **NSSDC (Code 586)**
- **Developed and Tested JAVA API's to get Data in and out of Common Data Format (CDF)**

SCIENCE SUPPORT

➢ **IMAGE/LENA (586)**

- **Installed and Analyzed Various Universal Data Format (UDF) Software Packages (Version 2.X) and Demonstrated Capabilities to LENA Scientists**
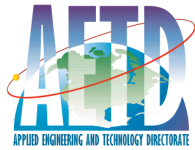- **Updated Data Simulation Tool to Accommodate LENA Testing Related to Ocean Color**

➢ **GODDARD DAAC (586)**

- **Implemented Software to Operationally Produce Gridded TRMM Rainfall Products in a Geographical Information System (GIS) Format for the Southern United States (Area Located South of 35 Degrees N), as well as Special Regions, such as the U.S. Mexican Border**

SCIENCE SUPPORT

➢ **ESDIS (581/582/586)**

- **Coordinated Internal and External Reviews of Prototypes – Java Information Management System (IMS)/IUAH, Truesphere/Global Science and Tech (GST), Mercury/Oak Ridge National Lab (ORNL), and Geographical Information System (GIS) Open**
- **Initiated Tasks to Evaluate the Possible Migration to (Hierarchical Data Format (HDF)5 – Newer Version of HDF, with better Features but not Backward Compatible**
- **Chaired the Invited Speaker Session at IEEE/NASA Conference on Mass Storage Systems**
- **Held DAAC Managers Meeting and cross-DAAC Outreach Workshop in Boulder, CO**
- **Received FGDC Approval to Develop an Extension to the Remote Sensing Metadata Standard**
- **Successfully Completed Terra (AM-1) End-To-End Tests – Commanded the Spacecraft and Instruments and Completed Several Fail-overs to the Redundant Side, Loaded Processors, and Conducted Stressful Operational Scenarios Involving Transitions to and from Safe Mode**
  - **Flowed Data from the S/C to the DAAC's and SCF's**

- **Provided Additional Training for Operators at White Sands**

BI-MONTHLY ISR – MAY 25, 1999
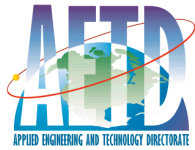
TECHNOLOGY ACTIVITIES

➢ **Space Objects Technology Group (SOTG) (Code 581)**

- **Initiated Phase 3 IDL for the Reference Architecture – Added Seven Vendors to the Team**

➢ **WIRE Testbed (Code 581/586)**

- **Examined Funding Strategy with Explorer's Project and HQ**
- **Completed Initial Draft of WIRE Testbed Project Management Plan**
- **Assisted in the Development of a Draft Version of the Operations Concept for WIRE Testbed Effort**

➢ **Hitchhiker (Code 582/584)**

- **Met with CSOC and Hitchhiker Project to Discuss Impacts of Potential Move of SPIF System to JSC**

➢ **Automated Multimodal Trending and Analysis System (AMTAS) (Code 588)**

- **Demonstrated Initial AMTAS Prototype Components for Trend Analysis and Error Detection**

TECHNOLOGY ACTIVITIES

- ➢ **Operating Missions as Nodes on the Internet (OMNI) (Codes 581/588)**

  - **Completed Initial Version of End-to-end Network Architecture Definition**
  - **Analyzed the Potential Technical Issues Raised by JPL, and no Technical 'show-stoppers' were uncovered – the Primary Hurdles are Cultural and Budgetary**
  - **Provided Input to Bob Spearing for NASA's Policy at the Upcoming International Interoperability Plenary Session**

- ➢ **Common Planning And Scheduling System (ComPASS) (Code 588)**

  - **Delivered ComPASS Planning Language Specification**

- ➢ **Participated in the Earth Science Vision Workshop Assessing IT Drivers for Information Synthesis and Access to Knowledge Components and Coordinated Inputs from 930, Data Assimilation Office and Other Members of GSFC's Scientific Community**

TECHNOLOGY ACTIVITIES

- ➢ **Scientist's Expert System for NGST (SEA) (Code 588)**

  - • **Completed Release 3 of the SEA Prototype Software and Installed at STScI**
  - • **Delivered SEA Evaluation Plan**
  - • **Transferred the Exposure Time Calculator to the ACS Instrument Team**

- ➢ **Instrument Remote Control (IRC) (Code 588)**

  - • **Completed IRC Prototype 1 for SPIRE**

- ➢ **Information Visualization (InVision) (Code 588)**

  - • **Conducted Image 2000 Design Review, including Demonstration of Initial Core Prototype**
  - • **Delivered Triana Launch Deployment Video Animation**

- ➢ **Code 587 Sponsored the Science and Information Systems Seminar Series, "High End Computer Networking with Links to National Supernets" – Speaker was Pat Gary/Code 930**

TECHNOLOGY ACTIVITIES

➢ **Conducted External Project Management Plan Reviews for the Following Efforts to Approve Long-term Goals and Short-term Milestones: (Code 588)**

- **Instrument Remote Control (IRC)**
- **Operating Missions as Nodes on the Internet (OMNI)**
- **Scientist's Expert Assistant (SEA)**
- **Common Planning And Scheduling System (ComPASS)**
- **Agents for Mission Autonomy**
- **Automated Multimodal Trending and Analysis System (AMTAS)**
- **Scientist's Mission Assistant and Research Tool (SMART)**
- **Virtual Mission Operations Center Collaborative Environment (VMOC/CE)**
- **Information Visualization (InVision/Image 2000)**

➢ **Automated Multimodal Trending and Analysis System (AMTAS) (Code 588)**

- **Demonstrated Initial AMTAS Prototype Components for Trend Analysis and Error Detection**
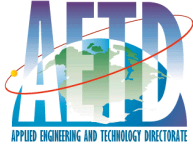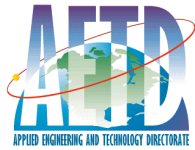
TECHNOLOGY PROGRAM

➢ **ISC Technology Planning**

- **Completed ISC Strategic Technology Plan (Technology Roadmap) and ISC Technology Program Operating Plan – Planned Distribution to ISC Employees is June 1**
- **Held Technology Education and Assessment (TEA) Seminars:**
- **"A Primer on Computer Security" with 29 in Attendance**
- **"It's Cool it's Animated, but is it Usable? – Issues of Usability and Graphic Design for the Web" was Broadcast on the Web and had 35 in Attendance**

➢ **Submitted four "Software of the Year" Award submissions; 2 (ITOS & Genie) Selected as GSFC Nominations for Agency-wide Down Selection at NASA HQ**

➢ **Hosted nearly 12 Representatives from JPL to Discuss and Plan a JPL/GSFC Mission Software Workshop (target date: late summer)**

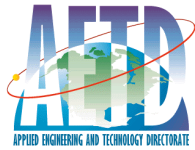➢ **Hosting GSFC Project Management Council for ISC Tech. Lab Tour**

INFRASTRUCTURE AND MISSION SUPPORT

➢ **MNSP (Code 450) Y2K Compliance (585)**

- **On Target for 64 of 65 Systems Operational by end of April – 10 New Systems Added in April**
- **SOHO Systems Currently Planned for Validation and Implementation/Certification in July**

➢ **Mission Networks (585)**

- **Completed Network and IT Security Assessments for QuickSCAT, NSIDC DAAC, GSFC DAAC, EDC, EOC, EDOS, and LaRC DAAC**

➢ **NCC (Code 583)**

- **Delivered White Sands Complex (WSC) TCP/IP Data Interface Service Capability (WDISC) to CSOC Operations**
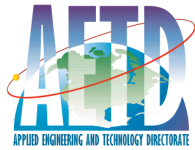
INFRASTRUCTURE AND MISSION SUPPORT

➢ **IFMP (585/588)**

- **Supported IFMP IAR in May**
- **Evaluated New System Architecture – Test Readiness/System Architecture Reviews Planned for June/July**
- **Developed Detailed Prototyping Plan for the EIS User Interface**
- **Evaluated the Physical Design of the EIS Data Warehouse and Holos Data Cubes**

ISO 9000 PROGRESS

➢ **ISO 9000 STATUS**

- **Updated Code 580 Handbook with Detailed Metrics Requirements**
- **Continued Management Review of Product Plans**
  - **Currently 16 of 25 completed (5/18/99)**

- **Code 583 Successfully Completed GSFC Internal Audit**

PERSONNEL STATUS

Full Time Civil Servants: 291 (as of 5/25/99)
Part Time Civil Servants: 12

Total Aboard as of 3/1/99   303

➢ **Gains from 3/1/99 - 5/25/99 = 4**

– 1 Co-Op Convert (1)

– Reassignments (3)

➢ **Projected/potential gains = 20**

– ROB/CPP/RFOs:

• ROBs posted (2)

• CPPs posted (12)

• CPPs to be posted (6)

➢ **Losses from 3/1/99 - 5/25/99 = 5**

– Resignations (3)

– Retirements (6)

➢ **Projected Losses (0)**

➢ **Open Positions on Web site (33)**

AWARDS AND PAPERS/CONFERENCES

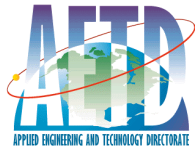➢ **Tim Ray/584 Attended CCSDS Telemetry and Telecommand Subpanel Workshop in Los Angeles**

➢ **Mike Prior/584 was one of 2 GSFC Personnel Accepted into the PDP Program and Plans to Spend 1 Year at JSC Gaining Manned-flight Mission Experience**

➢ **Ben Kobler/586 Received AIIM Award Certificate for his Accomplishment on ANSI-approved C21.1 M66 Standard**

➢ **Bill Potter and Doug Spiegel/584 Attended the AIAA Space Operations and Support Technical Committee Fifth Annual Workshop on Reducing the Cost of Space Operations on May 4-5 in Columbia, MD – Presented and Discussed HST, Landsat, AMOC, etc.**

➢ **Code 586 was Represented at the Metadata Conference in Bethesda (4/5/99)**

➢ **Co-presented a Tutorial on the First Industry Standard for Metadata Interchange of Files on Sequential Storage Media Between File Storage Management Systems at AIIM'99 Meeting in Atlanta**
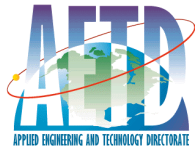
AWARDS AND PAPERS/CONFERENCES

➢ **An Image of the Scientist's Expert Assistant (SEA) Tool was Selected as the Cover for the Proceedings of the 1998 Astronomical Data Analysis and Systems Software (ADASS) Conference**

➢ **The Instrument Remote Control (IRC) Project won a "Business on the Internet" Award for the "Most Innovative Site" and the IRC's AIML was Mentioned in the Article "XML and the Second-Generation Web" in the May 1999 Issue of Scientific American**

➢ **Attended NASA Institute for Advanced Concepts (NIAC) Symposium for Grand Visions – the Next 30 Years**

➢ **Elaine Shell/582 Presented a Paper Entitled "Spacecraft Onboard Software Maintenance – An Effective Approach which Reduces Costs and Increases Science Return" at the 3rd International Symposium on Reducing the Cost of Spacecraft Ground Systems in Taiwan**

➢ **Walt Truszkowski/586 Chaired a Session at the INFORMS 99 Conference Entitled "Spacecraft Autonomy" which Included 4 GSFC Presentations – Automated Multimodal Trending and Analysis System (AMTAS), AI for Virtual Platforms, Adaptive Scheduler, and Agent-based Spacecraft Autonomy**

OUTREACH

➢ **Lori Perkins/584 is Curator of the Science Visualization Lab (SVL) Website and Writing PERL Scripts to Access Landsat Data – Website: svg.gsfc.nasa.gov**

➢ **Tom Taylor/584 Judged Multi-media Presentations at Worcester County Schools Tech Fest**

➢ **WFF Hosted Presentation of COTS Software Package SatTrack for ULDB Project and Wallops**

➢ **Code 584 was a Major Contributor to the Success of "Take your Children To Work Day" at Wallops**
  – **Assisted each Child Making a Web Page http://www.wff.nasa.gov/~code584/toctwd/groups.html] and Gave Tours of Control Center**

➢ **Code 586 Published an Outreach Flyer Entitled, "Ocean Color Data at the Goddard DAAC, CZCS, Seawifs, and MODIS"**

➢ **Code 586 Published an Outreach 'Flyer' "Moderate-Resolution Imaging Spectrometer (MODIS)"**

OUTREACH

➢ **Kevin Hartnett/586 Provided a Special Interest Program on Astronomy and Telescope for Staff and Children at the GSFC Child Care Center**

➢ **The SMART (Scientist's Mission Assistant and Research Tool) Project met with the Naval Research Laboratory, Navy Center for Applied Research in Artificial Intelligence, to Discuss Collaboration Possibilities with Respect to their Conversational Case-based Reasoning Tool, Navy Conversational Decision Aids Environment (NaCoDAE)**

➢ **Code 587 Sponsored the Science and Information Systems Seminar Series, "High End Computer Networking with Links to National Supernets" – Speaker was Pat Gary/Code 930**

COLLABORATIONS

➢ **Hosted Shigeyuki-Matsumori, Maritime Safety Agency of Japan, to Explore Collaborative Efforts to use DAAC Data to Facilitate Japanese Guard and Rescue Work**

➢ **SMART (Scientist's Mission Assistant and Research Tool) Project Team met with the Naval Research Laboratory, Navy Center for Applied Research in Artificial Intelligence, to Discuss Collaboration Possibilities with Respect to their Conversational Case-based Reasoning Tool, Navy Conversational Decision Aids Environment (NaCoDAE)**

➢ **Center for Image Processing in Education (CIPE) has Agreed to Assume Sustaining Engineering of the Image 2000 Tool, Currently under Development by Code 588, and Distribute it to over 5000 Educators – they attended the Recent Design Review and had very Positive Feedback**

➢ **The Image 2000 Project is Teaming with Sunsoft as a Beta Partner for their Java Advanced Imaging (JAI) product; they are Sharing Product Technical Information, Support, and Source-code in Exchange for our Experience in their JAI Marketing Push – JAI 1.0 will be Formally Released at the Upcoming JavaOne Conference**

INSTITUTIONAL ISSUES

ISSUES	ACTION PLANS	STATUS
VACANCIES: • **Code 582 FSW Civil Servant staff continue to depart GSFC with huge salary increases – Newest loss is Triana ACS FSW Lead**	**Prioritizing work and targeting new hires; using contractors wherever possible**	**Retention actions underway with AETD/OHR; Outside hiring to backfill some positions**
FUNDING: • **No FY99 budget cuts; SOMO/CSOC funding worked; Non-CSOC projects prioritized**	**Directing new projects to IDIQ'S and Non-CSOC contracts**	**Waiting for final budget**
• **Major reductions to out year budgets**	**Over guides submitted**	**Awaiting final SOMO decisions on POP99-1**

INSTITUTIONAL ISSUES

ISSUES	ACTION PLANS	STATUS
FACILITIES: HVAC construction disruptive and counterproductive for employees: – Doubled time in temporary housing – "Unexpected" loss of office space due to HVAC throughways – Also, repainting offices w/in 6 months and damaging newly-carpeted floors	Improved coordination by Facilities, with Directorate and Eng. Centers would lessen impacts Advance planning with Eng. Center Infrastructure Support Mgr. recommended	Open. Need for transition space increased due to accelerated renovation schedule